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BARN SWALLOW (HIRUNDO RUSTICA) NESTING HABITAT, USE OF BRIDGES AND CULVERTS AND OTHER STRUCTURES, AND IMPLICATIONS TO INFRASTRUCTURE PROJECTS IN ONTARIO

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1. INTRODUCTION

Barn Swallow is a medium-sized song bird that is approximately 15 to 18 cm long, which feeds on flying insects. They are easily recognized by their blue glossy back and upper wings, rusty- orange forehead and throat, brownish underbelly, and their deeply forked tails. In Ontario, they are most common in southern and central Ontario but occur as far north as Hudson Bay (COSSARO 2011). Barn Swallows nest on walls or ledges of barns and on other human-made structures such as bridges, culverts or other buildings (Lepage 2007). Barn Swallow often nest in small colonies of 2 to 59 nests in Ontario (Peck and James 1987), and often nest together with Cliff Swallows. Barns Swallows feed on aerial insects while foraging in open habitats such as meadows, hay, pasture or even mowed lawn. (COSEWIC 2011). Barn Swallows are associated with grassland. They will also frequently forage in woodland clearings, over wetland habitats or open water where insect prey are abundant. A review of historical data from the Ontario Nest Records Scheme was conducted by Bird Studies Canada and Stantec (Richardson et al. 2015) to identify historic patterns in use of structures. This analysis showed that although barns are the most commonly used nesting structure, their use over time has decreased, whereas the use of bridges and culverts has increased. To investigate present day use of structures, more than 500 bridges and culverts were surveyed from 2010-2015. The objective was to determine if there was a relationship between the presence of Barn Swallow nests and the physical characteristics of bridges and culverts, and the surrounding landscape. Preliminary analyses showed that only about 20% of bridges and culverts surveyed were used by Barn Swallows, although this varied across the province (Richardson et al. 2015) Barn Swallows appeared to select concrete culverts that were greater than 1.5 m wide; while unused culverts tended to be smaller in size or made of metal materials (Richardson et al. 2015). The surrounding landscape may also be an important contributor to the presence of nesting Barn Swallows; their distribution in Ontario appears to be related to the availability of open country habitat and possibly also to cattle abundance (Richardson et al. 2015).

2. STATUS

The Barn Swallow nests in all Canadian provinces and territories, throughout most of the United States and northern and central Mexico. The Ontario population represents 1% of global population and 3% of North American population and there is an estimated population size of 350,000 individuals, 91% of which occur in southern Ontario (COSSARO 2011). The North American population is showing long-term declined (COSSARO 2011), with the largest declines in the northeastern states and eastern Canada (COSEWIC 2011). Breeding bird survey data indicate an overall decline of 38% in North America between 1970 and 2009, and 80% in Canada for a similar period (COSEWIC 2011). Other aerial insectivores, including swallows, swifts, flycatchers and other birds that catch insects in flight, are declining more steeply than any other group of birds in Canada, but the causes of the decline are unknown (NABCI Canada 2012). Although Barn Swallow habitat loss is well documented, its potential role in the decline of the species is not well understood. Habitat loss includes the removal and modernization of

barns as nesting habitat, direct loss of foraging habitat. Other factors include loss of insect food through pesticide spraying.

3. LEGAL PROTECTION

The Barn Swallow is classified as a threatened species in Canada and Ontario. Barn Swallow is not listed on schedule 1 of the federal Species at Risk Act, 2002 (SARA), and is not protected by the SARA. Barn Swallow was added to the Species at Risk Ontario (SARO) List as a Threatened species in May 2011 and automatically receives legal protection from harm or harassment under the Endangered Species Act, 2007 (ESA). They also receive general habitat protection because a species-specific habitat regulation has not yet been developed.

When the ESA came into effect in 2007, proponents were required to obtain a permit from the Minister of Natural Resources and Forestry (MNRF) to undertake any activities which would contravene the ESA. Ontario Regulation (O.Reg.) 242/08 came into effect on July 1, 2013, to provide proponents with new exemptions that remove the requirement for the ESA (2007) permitting for eligible activities and streamline the authorization process. Instead of permitting, the Regulation introduces a new compliance process, which involves registering activities with MNRF through an online registry. The registration process is proponent driven; it is the proponent's responsibility to ensure the activity is eligible for one of the exemptions and that all requirements are met.

O.Reg. 242/08 Section 23.5 (Barn Swallow) allows proponents to register eligible activities that will affect habitat for Barn Swallow, including "the repair, maintenance, modification, replacement or demolition" of an existing structure with Barn Swallow nests. Under Section 23.5, proponents are required to prepare a mitigation plan and undertake a three-year monitoring program. The mitigation plan must include avoidance of the active Barn Swallow nesting period (May 1 to August 31), and creation of replacement nesting habitat (such as kiosks), including installation of nest cups at a 1:1 ratio.

O.Reg. 242/08 Section 23.18 (Threats to health and safety, not imminent) allows proponents to register activities that are necessary for maintaining human health of safety in habitat of some protected species, including Barn Swallow. Eligible projects include activities to "maintain, repair, remove, decommission or upgrade certain structures or infrastructure," including communication systems, power facilities, pipelines, roads, railways, water/wastewater/stormwater works, and drainage works. Activities that change the location, area or use, or the operation of existing structures or infrastructure are not eligible. Section 23.18 can be used for multiple protected species. Under this Section, the proponent is required to prepare a mitigation plan, however there is no requirement for monitoring as described for Section 23.5.

4. IMPLICATIONS TO INFRASTRUCTURE PROJECTS IN ONTARIO

Bird Studies Canada and Stantec research (Richardson et al. 2015) has shown that approximately 20% of bridges and culverts support nesting Barn Swallows and therefore, a large number of maintenance and upgrade projects may be subject to authorization under the ESA. In addition to the research data, we will review five construction projects in southern Ontario to demonstrate the implications of nesting Barn Swallow to projects. These case studies will provide an overview of approaches to field investigations and impact assessment; consultation undertaken with regulatory authorities (i.e., MNRF) to confirm preventative nesting measures and nest replacement strategies; design considerations; and mitigation plans prepared to address O.Reg. 242/08 Section 23.18 and Section 23.5. The case studies that were selected were: (1) Culvert Rehabilitation / Replacement of Structural Culverts in Southwestern Ontario (G.W.P. 3040-11-00 and G.W.P. 3032 14-00); (2) Highway 401 Reconstruction, Municipality of Chatham-Kent, Contract 1 (G.W.P. 3091-12-00); (3) Highway 401 Reconstruction, Municipality of Chatham-Kent, Contract 2 (G.W.P. 3086-14-00); (4) Oil and Gas Sector development, southern Ontario; and, (5) Residential development, southern Ontario.

There is no consensus on the effectiveness of the current mitigation plans, particularly with respect to the provision of artificial nesting habitat (e.g., nesting kiosks). The collection of habitat data from this collaborative research (Richardson et al. 2015) will help inform mitigation plans and hopefully assist with Barn Swallow recovery efforts.

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